

## **MULTILEVEL AND SPACE-FILLING GROUND-PLANES FOR MINIATURE AND MULTIBAND ANTENNAS**

### **ABSTRACT**

5

An antenna system includes one or more conductive elements acting as radiating elements, and a multilevel or space-filling ground-plane, wherein said ground-plane has a particular geometry which affects the operating characteristics of the antenna. The return loss, bandwidth, gain, radiation efficiency, and frequency performance can be controlled through multilevel and space-filling ground-plane design. Also, said ground-plane can be reduced compared to those of antennas with solid ground-planes.

10